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ABSTRACT

This response to a review committee reporting on young people's participation in post-compulsory education and training redefines the collection, analysis, and organization of ideas and information as a constituent part of the broader concept of information literacy. It is further suggested that information literacy should be identified as a separate key competency which is essential to the development of broad-based skills required for workplace efficiency and the ability to encompass change. The competencies required within the field of information literacy are described as integral to all subject areas, and recommends their infusion into the curriculum development process. It is further suggested that the competencies are not exclusive to one educational sector and they should be developed in a continuum which encompasses the transition from school to tertiary education and from education to work. An information skills curriculum to support the development of information literacy skills across all educational sectors is recommended. Three diagrams are used to illustrate the concepts presented: moving from data to knowledge; the learner using information resources; and information skills competency--the journey from school to work. (Contains 10 references.) (Author/ALF)

Library Network Branch
Support Services Division
TAFE♦TEQ

EMPLOYMENT-RELATED KEY COMPETENCIES FOR POST-COMPULSORY EDUCATION AND TRAINING

Response to The Mayer Committee's Discussion Paper

March 1992

EXECUTIVE SUMMARY

The Finn Report highlights the need for young people to collect, analyse and organise idea and information as a key competency within the area of Workplace Language and Communication.

This paper redefines the collection, analysis and organisation of ideas and information as a constituent part of the broader concept of information literacy. It is further suggested that information literacy should be identified as a separate key competency which is essential to the development of broad-based skills required for workplace efficiency and the ability to encompass change.

The paper describes the competencies required within the field of information literacy as integral to all subject areas and recommends their infusion into the curriculum development process. It is further suggested that the competencies are not exclusive to one educational sector, that they should be developed in a continuum which encompasses the transition from school to work, from school to tertiary education and from tertiary education to work.

It is recommended that the Mayer Committee pursue the development of an information skills curriculum which would support the continued development of information literacy across all educational sectors.

Library Network Branch
Support Services Division
TAFE♦TEQ

March 1992

Introduction

Within its report, the review committee reporting on Young People's Participation in Post-Compulsory Education and Training (Australian Education Council Review Committee 1991), suggested the existence of several areas of key competence. One of these areas, Workplace Language and Communication, highlights the need for young people to be able to collect, analyse and organise ideas and information.

This paper supports that suggestion. Library Network Branch, Support Services Division, TAFE♦TEQ, takes this opportunity to provide further discussion on this matter.

A Key Area of Competence

While being appreciative that this area has been acknowledged as a strand of an area of key competence, we suggest that the application of **these skills should not be limited to the area of Workplace Language and Communication exclusively.** Moreover, these skills, which may be categorised as those that comprise the defined area of information literacy, should be acknowledged as core competencies that underpin the success of a young person undertaking any course of study.

Supportive Arguments

To accept these skills as members of the set of core competencies is to agree to the propositions that were put forward through the report of the Department of Industrial Relations, Metal Trades Federation of Unions and Metal Trades Industry Association mission to Europe in 1988.

In the report it was stated that training curricula, when restructured, should

> *increasingly emphasise broader skills, new technology, autonomous working and the transferability of skills.* (*Towards a New Metal and Engineering Industry Award: The Report of the DIR, MTFU and MTIA Mission to UK, Sweden and West Germany, September 1988* 1988, p. 30).

The report continues by suggesting the need for

> *focusing on the system's ability to provide broad, transferable skills which assist the workforce to cope with rapid change.* (*Towards a New Metal and Engineering Industry Award: The Report of the DIR, MTFU and MTIA Mission to UK, Sweden and West Germany, September 1988* 1988, p. 33).

Much of the supporting arguments for these comments may be traced to the need to stimulate the competitiveness of industry. The report states

> *The requirements for a competitive industry mean that all workers must have skills which are transferable and adaptive.* (*Towards a New Metal and Engineering Industry Award: The Report of the DIR, MTFU and MTIA Mission to UK, Sweden and West Germany, September 1988* 1988, p. 9).

Not only has industry acknowledged this need, but so have those involved with higher education.

> *... employers and industry groups have attested ... to the value they place on graduates with a broad educational foundation and with well-developed conceptual, analytical and communication skills. The general problem solving skills of inquiry, analysis and synthesis are essential to the building of a flexible, versatile workforce able to cope with rapidly changing technology.* (Department of Employment, Education and Training 1988)

The Finn Report builds an argument for the creation of key areas of competence through its observation that

> ... *regular updating of skills and knowledge becomes essential to maintaining and enhancing productivity in the workplace.* (Australian Education Council Review Committee 1991, p. ix)

For this to occur,

> *Australia must continue to develop both the quality and quantity of skills and knowledge in our society.* (ibid, p. ix)

These are not just Australian observations. A recent American work (Soifer 1990) suggests that since the early 1980's industry has recognised the need for retraining and skill development in workers. She states

> *Workers are expected to be self-directed, flexible, and open to change. In addition, they must be problem solvers, decision makers, thoughtful questioners, critical thinkers and participants in work teams. With such demands in the workplace, it is apparent that the focus must be on education for ongoing growth - learning how to learn.* (Soifer 1990, pp. 9-10)

The Relationships between Data, Information and Knowledge

A concept, essential to the understanding of the processes involved in achieving mastery of the use of information, is the relationship between data, information and knowledge.

Ideas, concepts and information units exist in three states. The first is **data**. This is the raw state, a random grouping of facts and figures. In many ways this is latent information, the information exists but has not been developed to potential. The information is dormant.

The second state is that of **information.** This is where data that has been organised into coherent units capable of being understood and/or comprehended in a meaningful context. The data has been given some form of organisation. The information stage is static. The data has been organised ready for use.

The third state is **knowledge**. This is where the organised data - information - has been understood and/or comprehended in preparation for application either immediate or delayed. Usually this occurs though involvement in an educative process. This is a dynamic state - the information is being used.

Table 1, shown on the following page, illustrates this progression. While the intermediate steps of organising data into coherent, understandable structures, i.e. information resources, and the use of these resources to enable the learner to gain knowledge are shown; it should be stressed that these are process actions that enable progression from one state to another.

This diagram does not fully represent the processes involved in using information effectively. It only represents the transition from state to state. To describe the process of how information resources are used by learners, additional cells need to be added. Table 2 shows the addition of these cells.

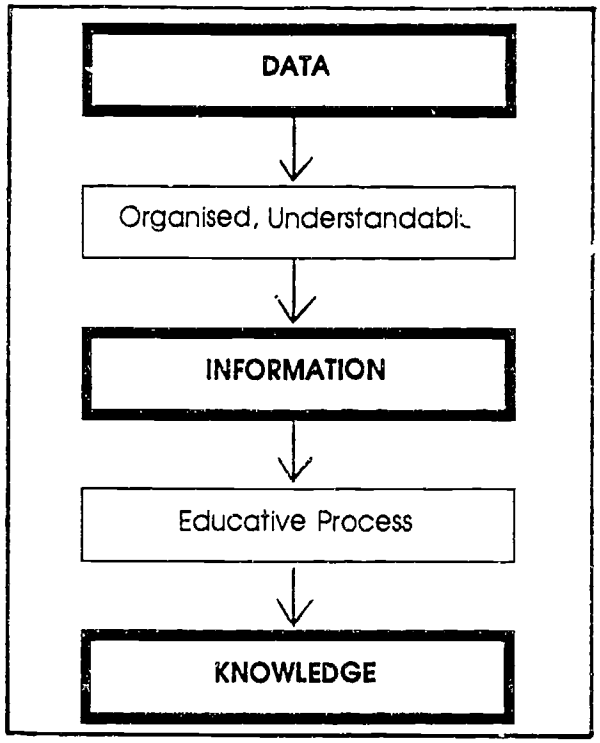

Table 1: Moving from Data to Knowledge

In most cases, the learner is not concerned with the initial transition of data to information resource, this being shown by the sequence of numerals. Rather, the entry point is at the information resource state. Entry is through the definition of an information need followed by the location of information resources that may satisfy the need. The progression is shown by the series of letters.

Very rarely will the whole information resource be required to help satisfy the need. In most cases, only portions of an information resource are required.

To handle the information resource effectively, the student must have the skills to be able to break the coherently

organised data making up the information resource into the data components. Hopefully the organisational pattern for the data will be retained in this decomposition. By retaining this the meaningfulness of the data elements will be retained.

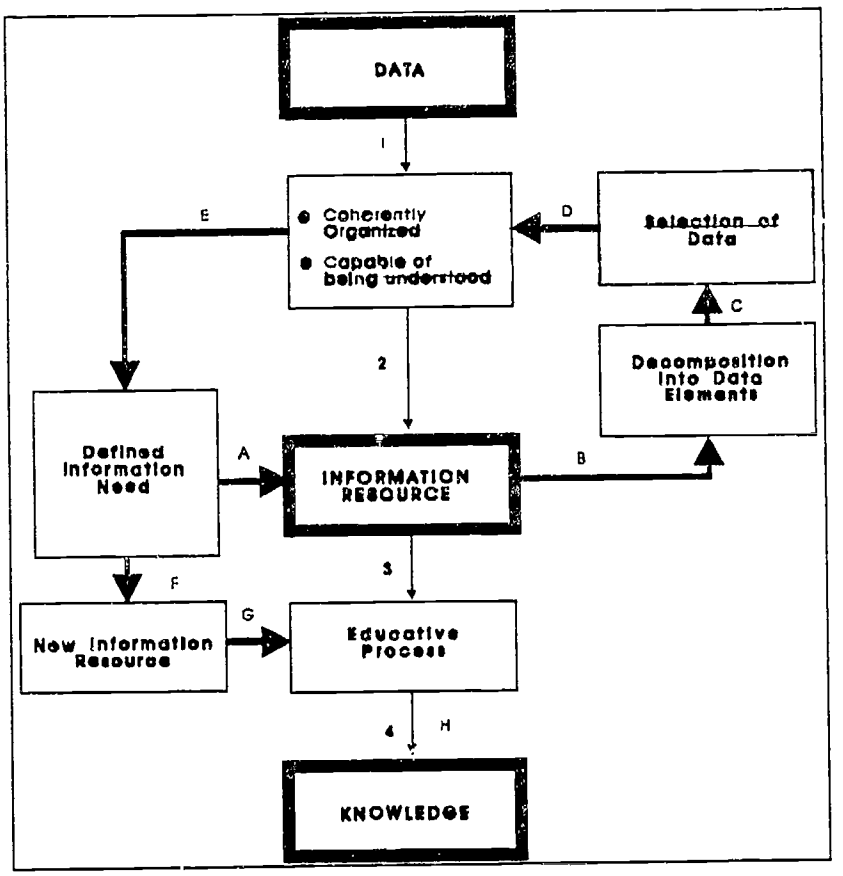

Table 2: The Learner Using Information Resources

The student uses information literacy skills to ensure that coherency of structure is retained, or imposed where various data have been extracted for corporatisation, and compares the data assembled with the information need that is driving the process.

Following affirmation of satisfaction, data is then organised coherently into a state where it can be understood. The student uses this new information resource to satisfy the information need and thus provide a resource through which knowledge may be gained.

The skills that students require are those that enable them to move data from state to state. To be able to manipulate, sort, organise and use information effectively, a student needs to have mastered the skills of information literacy.

In this context, libraries are deeply concerned with the provision of information resources. One of the library's roles is to ensure that the knowledge needs of students are able to be satisfied. Libraries gather data sources and organise them so that the capability exists for the information transfer to knowledge to occur.

Literacy defined

To provide a developmental basis, the following definition of literacy gives a context to which the concept of information literacy may be aligned.

> *Literacy involves the integration of listening, speaking, reading, writing and critical thinking - it incorporates numeracy. It includes the cultural knowledge which enables a person to recognise or use language appropriate to different social situations. For advanced technological societies such as Australia, the goal is an active literacy which allows people to use language, to enhance their capacity to think, create and question, in order to participate effectively in society.* (Australian Council for Adult Literacy, 1989.)

This definition is echoed in the materials referenced earlier. The concept of active societal participation being based on the ability of the constituents to be able to apply their skills is echoed in the suggested underpinning of Australia's successful economic recovery.

Information literacy

The above discusses literacy, however what does it mean to be **information literate?**

> *To be information literate, a person must be able to recognise when information is needed and have the ability to locate, evaluate and use effectively the needed information . . . . Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organised, how to find information, and how to use information in such a way that others can learn from them. They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand.*
> (American Library Association Presidential Committee on Information Literacy 1989.)

If students are to be come self-paced, individualised, life-long learners they must have mastery of a set of information literacy skills.

Information literacy is generated through an integrated set of skills and knowledge. The skills, most of which are process skills, include research strategies and methodologies, the evaluation of the quality of information provided through a range of resources.

The knowledge component includes the learner being aware of the range of tools and resources available for use. It includes awareness of how resources are organised and the information that specific types provide.

Breivik (1985) suggested that information literacy is developed through the acquisition of a set of attitudes. These attitudes include:

- persistence
- attention to detail
- caution in accepting printed word and single resources

In most cases, students need to be aware that effective use of information may be both time and labour intensive. In some cases, the information required may need a fair amount of 'detective work' to locate. Evaluating information from differing sources can require application of the attitudes listed above to ensure that the information used if accurate and appropriate to the student's needs.

Using information is a need-driven activity. Later, in this paper, discussion of problem solving skills is provided. Students will find that, by treating the location of information as a problem solving activity, effective and efficient usage is facilitated.

Breivik (1985) counselled that information literacy is **not:**

- (only) knowledge of resources. It involves mastery of process skills that enable this knowledge to be exploited and acquisition by the user of certain attitudes regarding the use of information.
- library dependent. The effective user of information is not bounded by a physical entity. The astute user will be aware of the range of information available and how that information may be used.
- information finding. The bounds of information literacy extend from the formulation of the information need, through the location of information, to the evaluation of the entire process.

Characteristics of success

A student who has used information effectively will exhibit these characteristics:

- direction - the student has a clear intent as to the purpose of the information gathering activity;
- ability - the student brings to the activity prior understanding and experience and mastery of at least a basic skill set of information processing competencies;
- resources - the student has used a satisfactory quantity and quality of resources; and
- effort - the student has a commitment to the process and faith in the quality of the final product.

These concepts need to be recognised as focal points with the development of any compilation of competencies.

Problems in using information

There is no such thing as perfect information or the perfect information user.

> *The only place that perfect people exist are in fictional books and movies - that's because errors can be edited out.* (Paulson 1989, n.p.)

Blaise Cronin from the University of Strathclyde identified the following 'difficulties' in using information:

- the quantity of information available will not be depleted through use; that is, unlike other products such as paper, the potential of use by others is not destroyed as the information is used;
- the cost effectiveness in using information is relational to the user and the intended application, one must take care that the time and effort put into locating and applying information is economically justifiable;
- while information may become redundant with time, this redundancy is relative to the application (one man's poison is another's nectar);
- information is capable of being recycled, due to this organisational overlays need to be applied so that information, once located, can be easily retrieved when required;
- it is extremely difficult to attach a value to information both as an exchange item and on a cost per unit basis;

and

- with the exponentially increasing availability of information, the information user needs to be able to confine the information gathering activity to the collection of that which is most highly applicable.

Collecting, using and storing information is a time and labour intensive exercise. Consistent and perceptive management is required to ensure the efficiency of the activity.

Future usage

In the future, the amount of information available to the learner will become greater. Tools that will enable users to identify and retrieve information will become more powerful. It is essential that learners receive a solid skilling in information usage competencies such as those discussed later in this paper. If the learner fails to achieve these, then they run the very real danger of being swamped with a plethora rather than being able to access a concise set of highly applicable information.

Developing competencies

In becoming information literate, the student will reach for the following goals. The information literate student will:

- be aware of the range of information resources available through a wide variety of information providers;
- have a sound grounding in research process methods;
- have a sound knowledge of how information and

information resources are organised; and

- be a confident, competent user of information resources.

Based on the work of Marland (1981), these are the competencies that need to be mastered to enable these goals to be achieved. An information literate student is able to:

- formulate and analyse the information need
- identify and appraise the worth of likely sources
- trace and locate individual resources
- examine, select and reject individual resources in the light of the information need
- interrogate resources to isolate required information
- record and store information
- interpret, analyse, synthesise and evaluate the information gathered
- present and communicate findings
- evaluate the conduct of the process.

Conclusions

Earlier it was suggested these competencies should be styled as core competencies. **Rather than being subject specific they should be treated as systemic.** By the same token, these skills are not to be developed within different educational sectors with notions of exclusivity. It would be more appropriate for these skills to be developed through progressional development, harmonious with the individual's development.

As Table 3 indicates, the target achievement should be the development and transferability of skills from school to work, from school to tertiary education and from tertiary education to industry (i.e. work). There should be no need to constantly repeat the same process at each stage of the student's journey through the information environment.

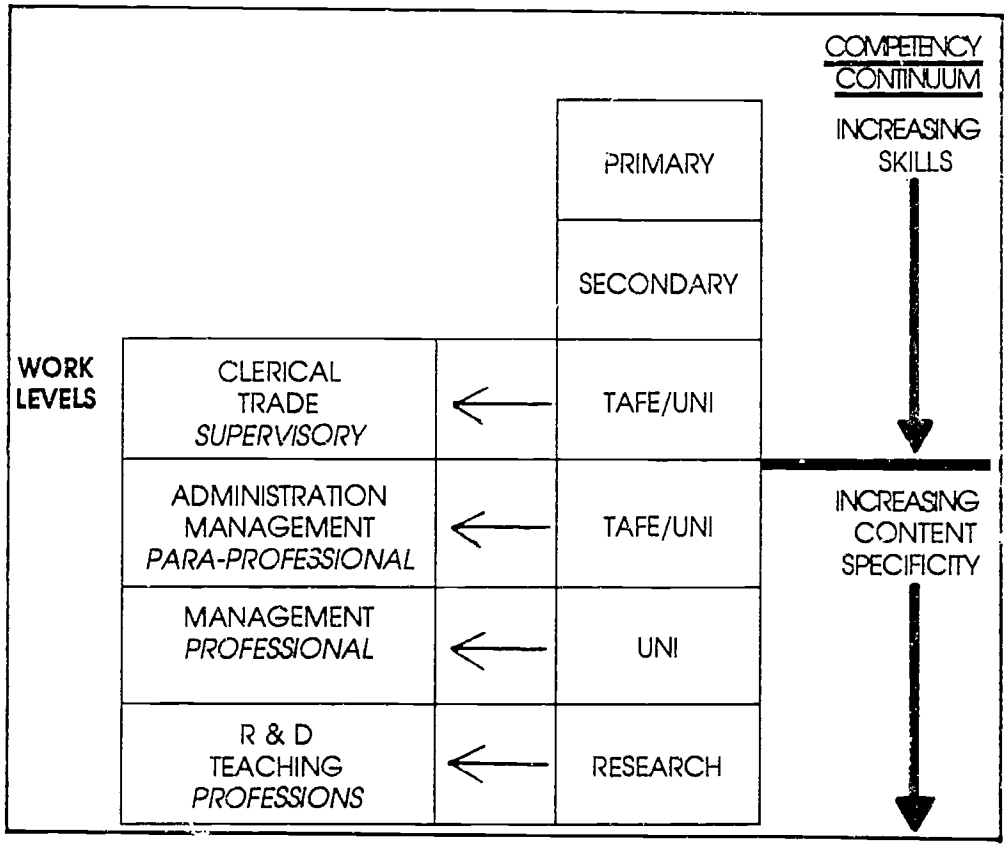

*Table 3: **Information Skills Competency: the Journey from School to Work***

The following concepts are sustainable as modes of development and delivery:

- co-operative information skills curriculum development between educational sectors and in collaboration with

stake holders, for example teachers, industry and students; *or*

- development of expected information skills competency levels at various educational exit/entry/progression points.

The former is preferred. If the latter mode was accepted, care would need to be taken to ensure that the individual abilities of the student were not bound by external parameters that may stifle the gifted or disadvantage the less proficient.

Library Network Branch strongly promotes that the work in the definition and description of the area of information literacy and the inherent set of skills be the subject of as wide a range of inputs as is manageable and sustainable. It is suggested that attainment of this literacy, underpinned by mastery of a strong, solid set of skills, is critical to the achievement of reasonable standards of competence within all subject areas. It is crucial that all sectors are given the opportunity to input so that a coherent, formative plan applicable to the whole gamut of education be established and installed.

Recommendations

1. The competency area of *accessing and using information*, identified within the key competency area of Language and Communication, should be redefined as a separate key area of competency to encompass the broader concept of information literacy.

2. A set of information literacy skills and competencies should be defined as systemic competencies and incorporated into the curriculum development process in all subject areas.

3. Information literacy skills and competencies should be developed within the context of a continuum across educational sectors in collaboration with teachers, students and industry stakeholders.

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